(b) measuring at least one optical property at a second area on said body part to obtain a second set of data, said second area being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said body part being morphologically similar to, adjacent to, but not substantially overlapping with said first area of said body part;

G1

(c) inserting said first set of data and said second set of data into a mathematical relationship to calculate a mathematical output; and

(d) comparing said mathematical output to a category selector to determine said disease state of said human subject.

8. (Once amended) The method of claim 1, wherein said mathematical relationship of step (c) is derived by a method comprising the steps of:

(a) providing a population comprising a sufficient number of human subjects to establish a category selector, said population comprising a first sub-population comprising a sufficient number of human subjects in said disease state and a second sub-population comprising a sufficient number of human subjects not in said disease state;

G2

(b) for each of said number of human subjects in said population:

(1) measuring at least one optical property at a first area on a body part of said human subjects to obtain a first set of data, said first area being subjected to a first temperature program;

(2) measuring at least one optical property at a second area on said body part of said human subjects to obtain a second set of data, said second area being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said body part being morphologically similar to, adjacent to, but not substantially overlapping with said first area of said body part; and

(c) establishing a mathematical relationship between (i) said optical properties of said first set of data and said second set of data and (ii) said disease state.

9. (Once amended) A method for determining concentration of an analyte in a body part, said method comprising the steps of:

(a) measuring at least one optical property at a first area on said body part to obtain a first set of data, said first area being subjected to a first temperature program;

(b) measuring at least one optical property at a second area on said body part to obtain a second set of data, said second area being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said body part being morphologically similar to said first area of said body part, said second area of said body part not substantially overlapping with said first area of said body part, and said second area of said body part being adjacent to said first area of said body part; and

(c) inserting said first set of data and said second set of data into a mathematical relationship to calculate said concentration of said analyte.

---

15. (Once amended) The method of claim 9, wherein said mathematical relationship of step (c) is derived by a method comprising the steps of:

(a) providing a population comprising a sufficient number of human subjects to establish a statistically meaningful mathematical relationship;

(b) for each of said number of human subjects in said population:

(1) measuring at least one optical property at a first area on said body part to obtain a first set of data, said first area being subjected to a first temperature program;

(2) measuring at least one optical property at a second area on said body part to obtain a second set of data, said second area of said body part being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said body part being morphologically similar to said first area of said body part, said second area of said body part not substantially overlapping with

said first area of said body part, and said second area of said body part being adjacent to said first area of said body part; and

(c) establishing a mathematical relationship between (i) said optical properties of said first set of data and said second set of data and (ii) said concentration of analyte.

A4

17. (Once amended) An apparatus for determining a disease state of a human subject or concentration of an analyte in a body part of a human subject, said apparatus comprising:

A5

(a) at least one source of light capable of illuminating at least two morphologically similar, adjacent, not substantially overlapping areas of said body part with light;

(b) at least one light collecting element to collect [collecting] light re-emitted from said at least two areas of said body part;

(c) a detector for measuring the intensity of said re-emitted light collected at said two areas of said body part; and

(d) a controller for controlling the temperature of said at least two areas of said body part simultaneously by means of temperature programs.

18. (Once amended) The apparatus of claim 17, further including (e) a computer for correlating the intensity of the re-emitted light collected at said at least two areas of said body part with said concentration of an analyte or said disease state, provided that said at least two areas of said body part are morphologically similar, adjacent, and substantially non-overlapping.